

HIPPLE (A.H.)

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Teeth.

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MEDICAL ASPECT OF DISEASED TEETH.

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THE development of what is known as the germ theory of disease has of late years directed the attention of physicians to the mouth as the point of infection to which the origin of many diseases might be traced, and has also called attention to the constitutional effects liable to arise from diseased teeth whose cavities are filled with pathogenic germs and whose roots are bathed in pus. The fact that dental caries is the most universal of all the diseases to which mankind is subject, and the painful nature of the complications which frequently arise from it, have caused it to receive some attention from medical writers; but, as a rule, dental lesions are regarded as trivial, the prognosis being exceedingly good so far as life is concerned, and as the loss of a tooth is too often looked upon as a matter of slight consequence, physicians rarely concern themselves very much about the teeth of their patients. The investigations of Dr. Miller, of Berlin, however, and of others, have shown that serious constitutional effects may arise and frequently

do arise from diseased dental organs, and that death occasionally results from the absorption into the system of infectious matter collected about the root of a tooth. Ten cases of death from this cause were reported to Dr. Miller as having occurred in the Hamburg General Hospital, and from various sources he obtained the history of twenty-seven other cases that terminated fatally. In a number of other instances chronic pyæmia, the cause of which was obscure and which would not yield to ordinary treatment, disappeared at once upon the removal of a diseased tooth. The importance of diseases of the teeth from a medical standpoint being thus established, the writer, without discussing the local disturbances that commonly arise from dental lesions, desires to call attention to those more serious affections which result either from micro-organisms traceable to diseased teeth or from nervous irritation induced by the teeth.

A tooth in which caries penetrating the pulp cavity has caused the death of the pulp, its suppuration and the formation of an alveolar abscess can not but be regarded by the thoughtful physician as a menace to the general health and even to the life of a patient. An examination of the skull will show a number of channels through which an inflammatory process in either jaw might reach the brain. The roots of the upper molars frequently pierce the floor of the antrum, from which the inflammatory process might extend to the nasal cavity, and through the cribriform plate of the ethmoid to the brain. If the inflammation extended to the back part of the mouth it might obtain entrance by way of the pterygoid fossa and the foramina at the base of the skull or by way of the inferior sphenoidal fissure and orbit. In the case of inflammatory processes in the lower jaw extending upward along the ramus, entrance to the cavity of the skull might be ob-

tained either by way of the pterygoid fossa or the orbit. A case was reported in the *Dental Record* of July, 1888, of an abscess in the lower jaw of a boy seven years of age caused by carious molars, in which the inflammatory process extended to the orbit and finally resulted in abscess of the brain and death. In another case reported in the *Edinburgh Medical Journal* some years ago the inflammation first made its appearance at the roots of the upper teeth, from which it spread to the antrum. The ethmoid bone was next attacked and became carious, the inflammatory process finally reaching the brain, causing encephalitis and death.

Reference has been made to the cases mentioned by Dr. Miller, where a general infection of the blood from pus collected about the root of a tooth resulted fatally. Much more common, however, and more difficult to diagnosticate, are those cases of chronic pyæmia in which metastatic abscesses form in such parts of the body as possess, for the time at least, the least powers of resistance. That these may result from a diseased tooth is beyond a doubt, the virus from the seat of infection being carried to points more or less remote by the blood or lymph.

Empyema of the antrum of Highmore is a disease of frequent occurrence, and is the direct result of dental lesions in a very large proportion of cases. The roots of several teeth being separated from the cavity of the antrum by only a thin layer of bone, and in some cases actually penetrating it, the danger of an inflammatory process about the roots of teeth extending into it or of an alveolar abscess breaking through its floor is necessarily very great. Pus having collected within the cavity, its form is such that it can not be perfectly emptied without surgical interference, the opening into the nose being so high above the floor that more or less matter always remains. This natu-

rally acts as an irritant, until finally the entire lining membrane becomes involved, resulting in a disease that is always loathsome, usually painful, and sometimes dangerous.

A serious inflammatory process, causing abscess and trismus, is often the result of an impacted wisdom tooth. There is some ground for believing that with the contraction of the jaws wisdom teeth are gradually disappearing from the mouths of civilized races, but in the vast majority of cases these organs still persist, and in attempting to erupt into an already crowded dental arch frequently bring about a chronic state of irritation. Upon examining the mouth in these cases the third molar of the lower jaw is found crowded into the ramus, while the corresponding upper tooth occupies the extreme rear of the maxillary tuberosity. Some of the micro-organisms that are always present in the mouth, and that never seem to cause any trouble so long as the tissues are in a perfectly healthy condition, soon find their way into the space between the crown of the partially erupted tooth and the gum covering it, and following the roots into the jaw, where the resistance of the tissue is diminished as the result of long-continued irritation, bring about a series of disturbances that occasionally end in necrosis, or even death from septicæmia. These cases are of particular interest to the physician, as the lesion is liable to be referred to some other cause, the presence of a wisdom tooth being often unknown to the patient, and the swelling and trismus making examination of the mouth almost impossible.

Just what effect upon the stomach is produced by the constant swallowing of bacteria and pus from diseased teeth, mingled with decomposing particles of food, we are unable to determine, but it is reasonable to suppose that gastric disturbances are greatly aggravated if not induced by so doing. In every community there are those who are

enthusiasts on the subject of pure air and wholesome food, but whose mouths are in such a neglected condition that the air which passes through them is almost as polluted as that of a crowded tenement, and every mouthful of food swallowed carries with it into the stomach millions of bacteria. The almost entire futility of sterilizing articles of diet for patients in whose mouth chronic abscesses exist, or whose teeth are covered with tartar mixed with mucus and food in a state of decomposition, need hardly be mentioned.

Of the more uncommon infectious diseases which have been traced to the action of mouth bacteria, and in the introduction of which into the system diseased teeth have been found to play a part, actinomycosis is one of the most interesting. This disease, which is widespread among cattle, was first described in man by James Israel, and is caused by a ray fungus that usually enters the body through the mouth. It gives rise to a small granulation tumor, followed by extensive proliferation of the adjacent connective tissue, forming a growth which, in the jaw, is easily mistaken for osteosarcoma. The lungs are frequently affected, and Osler says that thirty-four such cases have been reported since 1878, all but two of which proved fatal. A very interesting case, observed by Israel and described by Dr. Miller in the *Dental Cosmos* of February, 1891, was that of a driver, aged twenty-six, who was in the habit of sleeping in his barn, and frequently drank out of the same trough with his horse. The left side of the man's breast was covered with abscesses and ulcers, but the primary seat of infection was not discovered until after his death. The autopsy revealed an actinomycotic cavern in the anterior portion of the superior lobe of the left lung, in which was an irregular calcareous body about the size of a No. 6 shot. This was sent to Dr. Miller for microscopic examination

and proved to be a small fragment of dentine surrounded by phosphate and carbonate of lime, incorporated with which were numerous threads of the ray fungus. There seemed to be no doubt that the fragment was the carrier of the infection.

A very interesting field for investigation, and one that has as yet been imperfectly explored, is the influence of the teeth in inducing reflex nervous disorders in other parts of the body. The anatomical relations of the teeth are well known and their nervous connections have been carefully figured out, but while our knowledge in these directions may show us how reflex disturbances of the eye, ear, and other organs are possible as the result of dental lesions, many of these phenomena must, with our present knowledge of the subject, be regarded as mysterious.

That there is an intimate relation between ocular disorders and pathological conditions of the teeth is shown conclusively by Dr. Brubaker in the *American System of Dentistry*. He prefaches his remarks, however, with the statement that at the time of writing ophthalmologists were hardly prepared to admit that such disorders could result from dental irritation, Graefe and Saemisch merely alluding to such a relation, and Stelwag and Wells omitting its mention entirely. He adduces a large number of cases in support of his position that reflex ocular disturbances are frequently induced by the teeth, some of which are quite startling. One of the most remarkable was a case of amaurosis extending over a period of twelve years, which was cured within a few days by the extraction of a tooth. In a paper read before the New York Odontological Society in 1891, Dr. Stevens referred to the recent utterances of Galezowski upon this subject. This distinguished oculist says that many rebellious cases of corneal disease arise from reflex irritation induced by difficult first dentition;

that neuralgic affections about the eyes are often due to the second dentition; and that the appearance of the wisdom teeth is frequently associated with other ocular disturbances. Dental caries, he believes, is responsible for many cases of accommodative asthenopia, and he relates a case of blindness of one eye, where no lesion could be detected with the ophthalmoscope, which he attributed to the extraction of a tooth. Tomes says that "many well-authenticated cases have been recorded in which not only functional but organic diseases of the eye have been distinctly traced to the presence of diseased teeth," and mentions the case of an adult who had strabismus for three years, and ptosis for a portion of that time, both of which were completely cured by the extraction of decayed teeth.

Oral irritation appears to be much less frequently referred to the ear than to the eye, although in some cases aural derangements undoubtedly owe their origin or continuance to diseased teeth. Magitot says that partial or total deafness is sometimes the result of dental caries, and Vautier tells of a case of deafness that resulted from a diseased wisdom tooth. Robert Barclay has reported twenty cases of various aural derangements which were not benefited until thorough dental treatment had been instituted. He believes that as the result of oral irritation reflected to the ear a change is produced in the caliber of the blood-vessels, through vaso-motor influence, which is followed by hyperæmia, increased glandular activity, and congestion of the integument of the canal and mucous membrane of the tympanum. In a lecture to the students of Guy's Hospital, some years ago, Dr. Hilton gave a detailed statement of the case of a professional friend, Dr. Addison, bearing upon this point. The patient had suffered for some time from a very offensive discharge from the auditory canal of

one of his ears, and below the external ear was an enlarged gland. Aural treatment had been tried without success, until a diseased lower molar was diagnosticated as the probable cause of the trouble. This was extracted, after which the discharge and morbid secretion soon disappeared and the enlarged gland subsided. Dr. Hilton was of the opinion that the dental irritation was conveyed to the auditory canal and induced a morbid secretion. This morbid secretion led to an ulceration, and the fluid from the ulcer being absorbed by the lymphatics and carried to the gland, caused its enlargement. Josef Gruber tells of a boy thirteen years of age who showed symptoms of fright and complained of a very disagreeable sensation in both ears whenever he heard the slightest unexpected sound. This increased sensibility disappeared upon the extraction of a decayed and painful tooth.

Cases of epilepsy and paralysis caused by carious teeth have been reported, but might reasonably be discredited were it not that they have been recorded by observers whose veracity and ability in diagnosis are unquestioned. The famous Dr. Benjamin Rush, of Philadelphia, in a letter to Dr. Miller, written in the year 1802, tells of a case of epilepsy in his practice that was cured by the extraction of several decayed upper teeth, and a similar case is quoted by Tomes as having been reported by Dr. Ramskill in the *Medical Times and Gazette*. In *Guy's Hospital Reports* for 1868 is the record of a woman who had suffered for two years from severe pains in the face, neck, and left arm. Nearly all muscular power in the arm had been lost and she was unable to raise it to her head. The extraction of a lower wisdom tooth gave immediate relief, and all the symptoms disappeared within a very short time. A lower wisdom tooth was also the cause of paralysis of the arm in the case of a woman, twenty-four years of age, reported by

Salter, and reports of similar cases have from time to time been published.

But perhaps the most common and certainly the most painful reflex disturbance liable to arise from diseased teeth is facial neuralgia. Given a patient with the neuralgic diathesis, and the most trivial dental lesion seems sufficient to bring on an attack of this malady. Indeed, patients who do not appear to possess more than an ordinary susceptibility to reflex or sympathetic disturbances frequently suffer from severe neuralgic pains as the result of apparently trifling dental irritation. Dr. Garretson tells of a surgeon of the United States navy who came home from China under the impression that he had softening of the brain. He was suffering severely, and had consulted many physicians that he had met abroad, but had received no benefit from their treatment. Upon examining the mouth, Dr. Garretson found an upper bicuspid tooth with one of the most beautiful fillings in it that he had ever seen. At a venture he extracted the tooth, and thereby effected an instantaneous cure. Some time ago the writer was consulted by an apparently healthy old gentleman, who stated that he was suffering from *tic dououreux*. He had been treated by prominent physicians in various cities without obtaining relief, and had given up all hope of a permanent cure. Life had become a burden to him, however, and as the extraction of a couple of sound teeth had given him temporary relief upon a former occasion, he was considering the advisability of sacrificing his teeth one by one. None of them were carious or tender to percussion, but, upon making a careful examination of the gums, a minute opening was found, just back of the right upper cuspid, that appeared to lead upward to the fragment of a bicuspid root. There was no swelling, no tenderness, no pus, but extraction was advised, and afforded prompt and permanent relief from all the symptoms.

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In concluding this article—which, by the way, is intended to be merely suggestive—the writer feels that he can not do better than quote from the letter of Dr. Rush, before referred to :

I can not help thinking that our success in the treatment of all chronic diseases would be much promoted by directing our inquiries into the state of the teeth of sick people, and by advising their extraction in every case in which they are diseased. It is not necessary that they should be attended with pain to produce disease, for splinters, tumors, and other irritants often bring on disease and death when they give no pain and are unsuspected as the cause of them. The translation of sensation and motion to parts remote from the place where impressions are made appears in many instances, and seems to depend upon an original law of the animal economy.

Fortunately, we no longer find it necessary to extract all decayed teeth ; but the necessity for making a thorough examination of the mouth in cases of chronic disease is as great now as it was then, and, with the extension of our knowledge, our ability to relieve suffering has greatly increased.

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EDITED BY

FRANK P. FOSTER, M.D.

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